Appendix F

San Tomas Business Park
Santa Clara, CA
Air Quality Study

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Introduction

This report presents results of an air quality impact assessment prepared for the proposed San Tomas Business Park Project located on either side of the San Tomas Aquino Creek Channel, south of Central Expressway in Santa Clara, California. The 35.6-acre project site is comprised of three parcels (APNs 216-28-128, 224-11-065 and 244-11-066) and is currently designated Light Industrial under the City of Santa Clara's adopted General Plan and zoned ML – Light Industrial. The proposed project includes three new office buildings totaling 1,950,00 square feet with three accompanying parking structures and surface parking lots. Existing buildings on site totaling 691,214 square feet (509,862 square feet of office space and 181, 352 square feet of research and development space) are mostly vacant and would be removed.

This analysis evaluates the air quality impacts of the proposed expansion of the project site. The impact associated with the proposed development was evaluated in terms of operational and construction impacts to air quality. This analysis was conducted following guidance provided by the Bay Area Air Quality Management District (BAAQMD)[1].

Overall Regulatory Setting

The Federal Clean Air Act governs air quality in the United States. In addition to being subject to Federal requirements, air quality in California is also governed by more stringent regulations under the California Clean Air Act. At the Federal level, the United States Environmental Protection Agency (USEPA) administers the Federal Clean Air Act. The California Clean Air Act is administered by the California Air Resources Board (CARB) at the State level and by the Air Quality Management Districts at the regional and local levels. The Bay Area Air Quality Management District (BAAQMD) regulates air quality at the regional level, which includes the nine-county Bay Area.

United States Environmental Protection Agency

The US EPA is responsible for enforcing the Federal CAA. The US EPA is also responsible for establishing the National Ambient Air Quality Standards (NAAQS). NAAQS are required under the 1977 Clean Air Act and subsequent amendments. The US EPA regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain types of locomotives. The agency has jurisdiction over emission sources outside state waters (e.g., beyond the outer continental shelf) and establishes various emission standards, including those for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission standards established by CARB.

California Air Resources Board

In California, CARB which is part of the California Environmental Protection Agency, is responsible for meeting the state requirements of the Federal Clean Air Act, administering the California Clean Air Act, and establishing the California Ambient Air Quality Standards (CAAQS). The California Clean Air Act requires all air districts in the State to endeavor to achieve and maintain the CAAQS. CARB regulates mobile air pollution sources, such as motor

[1] BAAQMD CEQA Guidelines for Assessing Air Quality Impacts from Projects and Plans, 1996, revised 1999.

vehicles. The agency is responsible for setting emission standards for vehicles sold in California and for other emission sources, such as consumer products and certain off-road equipment. CARB has established passenger vehicle fuel specifications and oversees the functions of local air pollution control districts and air quality management districts, which in turn administer air quality activities at the regional and county level. CARB also conducts or supports research into the effects of air pollution on the public and develops innovative approaches to reducing air pollutant emissions.

Bay Area Air Quality Management District

BAAQMD is primarily responsible for assuring that the National and State ambient air quality standards are attained and maintained in the Bay Area. BAAQMD is also responsible for adopting and enforcing rules and regulations concerning air pollutant sources, issuing permits for stationary sources of air pollutants, inspecting stationary sources of air pollutants, responding to citizen complaints, monitoring ambient air quality and meteorological conditions, awarding grants to reduce motor vehicle emissions, conducting public education campaigns, as well as many other activities. BAAQMD has jurisdiction over much of the nine-county Bay Area counties.

National and State Ambient Air Quality Standards

As required by the Federal Clean Air Act, NAAQS have been established for six major air pollutants: carbon monoxide (CO), nitrogen oxides (NO_x), ozone (O_3), respirable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), sulfur oxides, and lead. Pursuant to the California Clean Air Act, the State of California has also established ambient air quality standards. These standards are generally more stringent than the corresponding federal standards and incorporate additional standards for sulfates, hydrogen sulfide, vinyl chloride and visibility reducing particles. Both State and Federal standards are summarized in Table 1. The "primary" standards have been established to protect the public health. The "secondary" standards are intended to protect the nation's welfare and account for air pollutant effects on soil, water, visibility, materials, vegetation and other aspects of the general welfare. CAAQS are more stringent than NAAQS. Thus, CAAQS are used as the comparative standard in this analysis.

Table 1 Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards	National Standards [a]	
			Primary [b,c]	Secondary [b,d]
Ozone	8-hour	0.07 ppm	0.075 ppm	—
	1-hour	0.09 ppm	—[e]	Same as primary
Carbon monoxide	8-hour	9.0 ppm	9 ppm	—
	1-hour	20 ppm	35 ppm	—
Nitrogen dioxide	Annual	0.03 ppm	0.053 ppm	Same as primary
	1-hour	0.18 ppm	0.030 ppm	—
Sulfur dioxide	Annual	—	0.03 ppm	—
	24-hour	0.04 ppm	0.14 ppm	—
	3-hour	—	—	0.5 ppm
	1-hour	0.25 ppm	—	—
PM_{10}	Annual	20 $\mu g/m^3$	--[f]	Same as primary
	24-hour	50 $\mu g/m^3$	150 $\mu g/m^3$	Same as primary
$PM_{2.5}$	Annual	12 $\mu g/m^3$	15 $\mu g/m^3$	
	24-hour	—	35 $\mu g/m^3$ [f]	
Lead	Calendar quarter	—	1.5 $\mu g/m^3$	Same as primary
	30-day average	1.5 $\mu g/m^3$	—	—

Notes: (a) Standards, other than for ozone and those based on annual averages, are not to be exceeded more than once a year. The ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one.

(b) Concentrations are expressed first in units in which they were promulgated. Equivalent units given in parenthesis.

(c) Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health. Each state must attain the primary standards no later than 3 years after that state's implementation plan is approved by the EPA.

(d) Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

(e) The national 1-hour ozone standard was revoked by U.S. EPA on June 15, 2005.

(f) The annual PM_{10} standard was revoked by U.S. EPA on September 21, 2006 and a new $PM_{2.5}$ 24-hour standard was established.

Criteria Air Pollutants & Effect

Air quality studies generally focus on five pollutants that are most commonly measured and regulated: carbon monoxide (CO), ground level ozone, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and suspended particulate matter, i.e., PM_{10} and $PM_{2.5}$. In the Santa Clara County, ozone and particulate matter are the pollutants of greatest concern since measured air pollutant levels exceed these concentrations at times.

Carbon Monoxide

CO, a colorless and odorless gas, interferes with the transfer of oxygen to the brain. It can cause dizziness and fatigue and can also impair central nervous system functions. CO is emitted almost exclusively from the incomplete combustion of fossil fuels. Automobile exhausts release approximately 70 percent of CO in the Bay Area. A substantial amount also comes from burning wood in fireplaces and wood stoves. CO is a non-reactive air pollutant that dissipates relatively quickly, so ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic. The highest CO concentrations measured in the Bay Area are typically recorded during the winter.

Ozone

Ozone, a colorless toxic gas, is the chief component of urban smog. Ozone enters the blood stream and interferes with the transfer of oxygen, depriving sensitive tissues in the heart and brain of oxygen. Although ozone is not directly emitted, it forms in the atmosphere through a chemical reaction between reactive organic gas (ROG) and nitrogen oxides (NO_X) under sunlight.[2] ROG and NOx are primarily emitted from automobiles and industrial sources. Ozone is present in relatively high concentrations within the Bay Area, and the damaging effects of photochemical smog are generally related to the concentration of ozone. Highest ozone concentrations occur during summer and early autumn, on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies.

Nitrogen Dioxide

NO_2, a reddish-brown gas, irritates the lungs. It can cause breathing difficulties at high concentrations. Like ozone, NO_2 is not directly emitted, but is formed through a reaction between nitric oxide (NO) and atmospheric oxygen. NO and NO_2 are collectively referred to as nitrogen oxides (NO_x) and are major contributors to ozone formation. NO_2 also contributes to the formation of PM_{10} (see discussion of PM_{10} below).

Sulfur Oxides

Sulfur oxides, primarily SO_2, are a product of high-sulfur fuel combustion. The main sources of SO_2 are coal and oil used in power stations, in industries, and for domestic heating. SO_2 is an irritant gas that attacks the throat and lungs. It can cause acute respiratory symptoms and diminished ventilator function in children. SO_2 concentrations have been reduced to levels well below the state and national standards, but further reductions in emissions are needed to attain compliance with standards for PM_{10}, of which SO_2 is a contributor.

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[2] ROG and NO_X are emitted from automobiles and industrial sources.

Suspended Particulate Matter

Particulate matter pollution consists of very small particles suspended in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter also forms when industry and gaseous pollutant undergo chemical reactions in the atmosphere. Respirable particulate matter (PM_{10}) and fine particulate matter ($PM_{2.5}$) represent fractions of particulate matter. PM_{10} refers to particulate matter less than 10 microns in diameter and $PM_{2.5}$ refers to particulate matter that is 2.5 microns or less in diameter. Major sources of $PM_{2.5}$ results primarily from diesel fuel combustion (from motor vehicles, power generation, industrial facilities), residential fireplaces, and wood stoves. PM_{10} include all $PM_{2.5}$ sources as well as emissions from dust generated by construction, landfills, and agriculture; wildfires and brush/waste burning, industrial sources, windblown dust from open lands, and atmospheric chemical and photochemical reactions. PM_{10} and $PM_{2.5}$ pose a greater health risk than larger-size particles, because these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract, increasing the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Whereas larger particles tend to collect in the upper portion of the respiratory system, $PM_{2.5}$ are so tiny that they can penetrate deeper into the lungs and damage lung tissues. Suspended particulates also damage and discolor surfaces on which they settle, as well as produce haze and reduce regional visibility. The U.S. EPA recently adopted a new more stringent standard of 35 $\mu g/m^3$ for 24-hour exposures based on a review of the latest new scientific evidence. At the same time, U.S. EPA revoked the annual PM_{10} standard due to a lack of scientific evidence correlating long-term exposures of ambient PM_{10} with adverse health effects.

Toxic Air Contaminants (TAC)

TACs are a broad class of compounds known to cause morbidity or mortality (usually because they cause cancer) and include, but are not limited to, the criteria air pollutants listed above. TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., benzene near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, state, and federal level.

Diesel exhaust is the predominant cause of TAC in urban air and is estimated to represent about two-thirds of the cancer risk from TACs (based on the statewide average). According to CARB, diesel exhaust is a complex mixture of gases, vapors and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the ARB, and are listed as carcinogens either under the state's Proposition 65 or under the Federal Hazardous Air Pollutants programs.

CARB reports that recent air pollution studies have shown an association that diesel exhaust and other cancer-causing toxic air contaminants emitted from vehicles are responsible for much of the overall cancer risk from TACs in California. Particulate matter emitted from diesel-fueled engines (diesel particulate matter [DPM]) was found to make up much of that risk. In August 1998, CARB formally identified DPM as a TAC. Diesel particulate matter is of particular concern since it can be distributed over large regions, thus leading to widespread public exposure. The particles emitted by diesel engines are coated with chemicals, many of which

have been identified by EPA as hazardous air pollutants, and by CARB as TACs. Diesel engines emit particulate matter at a rate about 20 times greater than comparable gasoline engines. The vast majority of diesel exhaust particles (over 90 percent) consist of $PM_{2.5}$, which are the particles that can be inhaled deep into the lung. Like other particles of this size, a portion will eventually become trapped within the lung, which can lead to adverse health effects. While the gaseous portion of diesel exhaust also contains TACs, CARB's 1998 action was specific to DPM that accounts for much of the cancer-causing potential from diesel exhaust. California has adopted a comprehensive diesel risk reduction program to reduce DPM emissions 85 percent by 2020. The U.S. EPA and CARB adopted low sulfur diesel fuel standards in 2006 that reduce diesel particulate matter substantially.

In cooler weather, smoke from residential wood combustion can be a source of TACs. Localized high TAC concentrations can result when cold stagnant air traps smoke near the ground and when there is no wind present, the pollution can persist for many hours. This occurs in sheltered valleys during the winter. Wood smoke also contains a significant amount of PM_{10} and $PM_{2.5}$. Wood smoke is an irritant and is implicated in worsening asthma and other chronic lung problems.

Air Quality Planning

Bay Area Clean Air Plan

BAAQMD along with the other regional agencies (i.e., ABAG and MTC) has prepared an Ozone Attainment Plan to address the 1-hour NAAQS for ozone. Although U.S. EPA revoked the 1-hour NAAQS, commitments made in that plan along with emissions budgets remain valid until the region develops an attainment demonstration/maintenance plan for the 8-hour NAAQS for ozone. The region will be required to submit a maintenance plan and demonstration of attainment with a request for redesignation to EPA in when the 8-hour ozone NAAQS is met. A Carbon Monoxide Maintenance Plan was approved in 1998 by EPA, which demonstrated how the NAAQS for carbon monoxide standard would be maintained.

Air quality plans addressing the California Clean Air Act are developed about every three years. The plans are meant to demonstrate progress toward meeting the more stringent 1-hour ozone CAAQS. The latest plan, which was adopted in January 2006, is called the *Bay Area 2005 Ozone Strategy*. This plan includes a comprehensive strategy to reduce emissions from stationary, area, and mobile sources. The plan objective is to indicate how the region would make progress toward attaining the stricter state air quality standards, as mandated by the California Clean Air Act. The plan is designed to achieve a region-wide reduction of ozone precursor pollutants through the expeditious implementation of all feasible measures. The plan proposes expanded implementation of transportation control measures (TCMs) and programs such as Spare the Air. Spare the Air is a public outreach program designed to educate the public about air pollution in the Bay Area and promote individual behavior changes that improve air quality. Some of these measures or programs rely on local governments for implementation.

The clean air planning efforts for ozone will also reduce PM_{10} and $PM_{2.5}$, since a substantial amount of this air pollutant comes from combustion emissions such as vehicle exhaust. In addition, BAAQMD adopts and enforces rules to reduce particulate matter emissions and develops public outreach programs to educate the public to reduce PM_{10} and $PM_{2.5}$ emissions

(e.g., Spare the Night Program). SB 656 requires further action by CARB and air districts to reduce public exposure to PM_{10} and $PM_{2.5}$. Efforts identified by BAAQMD in response to SB656 are primarily targeting reductions in wood smoke emissions and adoption of new rules to further reduce NOx and particulate matter from internal combustion engines and reduce particulate matter from commercial charbroiling activities. NOx emissions contribute to ammonium nitrate formation that resides in the atmosphere as particulate matter. The Bay Area experiences the highest PM_{10} and $PM_{2.5}$ in winter when wood smoke and ammonium nitrate contributions to particulate matter are highest.

Physical Setting

Climate and Topography

The project is located in the City of Santa Clara in Santa Clara Valley. The proximity of this location to both the Pacific Ocean and the San Francisco Bay has a moderating influence on the climate. The valley is bounded to the north by the San Francisco Bay and by mountains to the east, south, and west. The surrounding terrain greatly influences winds in the valley, resulting in a prevailing wind that follows along the valley's northwest-southeast axis. During the afternoon and early evening, a north-northwesterly sea breeze often flows from the Bay through the valley, and a light south-southeasterly drainage flow often occurs during the late evening and early morning hours. Wind data collected at Alviso and Mineta San José International Airport characterize wind flow at the project site. Winds are mostly from the northwest (off the Bay), occurring about 50% of the time. Wind flow from the southeast occurs about 25% of the time, with light and variable winds occurring the other 25% of the time. Wind speed on average is about 5 miles per hour.

Typical summer maximum temperatures for the region are in the low 80's, while winter maximum temperatures are in the high 50's or low 60's. Minimum temperatures usually range from the high 50's in the summer to the upper 30's and low 40's in the winter. Rainfall in the valley is approximately 15 to 20 inches per year, occurring mostly in the months of November through March.

Air quality standards for ozone traditionally are exceeded when relatively stagnant conditions occur for periods of several days during the warmer months of the year. Weak wind flow patterns combined with strong inversions substantially reduces normal atmospheric mixing. Key components of ground-level ozone formation are sunlight and heat; therefore, significant ozone formation only occurs during the months from late spring through early fall. Prevailing winds during the summer and fall can transport and trap ozone precursors from the more urbanized portions of the Bay Area. Meteorological factors make air pollution potential in the Santa Clara Valley quite high. The clear skies with relatively warm conditions that are typical in summer combine with transported and localized air pollutant emissions to elevate ozone levels. The surrounding mountains upslope and down slope flows may also recirculate pollutants already present, contributing to the buildup of air pollution. Light winds and stable conditions during the late fall and winter contribute to the buildup of particulate matter from motor vehicles, agriculture, and wood-burning fireplaces and stoves.

Air Monitoring Data

Air quality in the region is controlled by the rate of pollutant emissions and meteorological conditions. Meteorological conditions such as wind speed, atmospheric stability, and mixing height may all affect the atmosphere's ability to mix and disperse pollutants. Long-term variations in air quality typically result from changes in air pollutant emissions, while frequent, short-term variations result from changes in atmospheric conditions. The San Francisco Bay Area is considered to be one of the cleanest metropolitan areas in the country with respect to air quality. BAAQMD monitors air quality conditions at over 30 locations throughout the Bay Area. There are several BAAMQD monitoring stations in San José, which are closest to this part of Milpitas. Air pollutant concentrations measured at stations closest to the project area are shown in Table 2.

The pollutant of most concern in the Santa Clara area is ozone, since prevailing summertime wind conditions tend to cause a build up of ozone in the Santa Clara Valley. Ozone levels measured in San Jose, exceeded the state ozone standard from 0 to 5 times in 2002-2006. In the last 5 years, the 8-hour national ozone standard was exceeded only once in 2006 during an extended heat wave. Measured exceedances of the state PM_{10} standard have occurred between two and three measurement days each year in San Jose (estimated at 12 to 18 days). PM_{10} and $PM_{2.5}$ are measured every sixth day. Exceedances of the Federal $PM_{2.5}$ standard of 65 $\mu g/m^3$ were not measured in San José; however, the new standard of 35 $\mu g/m^3$ was exceeded on six measurement days during 2006 (estimated 36 days per year). The entire Bay Area, including San Jose, did not experience any exceedances of other air pollutants. Table 3 reports the number of days that an ambient air quality standard was exceeded at any of the stations in San José near the project and in the entire Bay Area.

Table 2 Highest Measured Air Pollutant Concentrations

Pollutant	Average Time	Measured Air Pollutant Levels				
		2003	**2004**	**2005**	**2006**	**2009**
East San Jose						
Ozone (O_3)	1-Hour	**0.10** ppm	0.09 ppm	**0.11 ppm**	NA	NA
	8-Hour	0.07 ppm	0.07 ppm	0.08 ppm	NA	NA
San José 4th Street/Central (relocated in 2002)						
Ozone (O_3)	1-Hour	**0.12** ppm	0.09 ppm	**0.11** ppm	**0.12** ppm	0.08 ppm
	8-Hour	0.08 ppm	0.07 ppm	0.08 ppm	0.09 ppm	0.07 ppm
Carbon Monoxide (CO)	8-Hour	4.0 ppm	2.9 ppm	3.1 ppm	2.9 ppm	2.7 ppm
Nitrogen Dioxide (NO_2)	1-Hour	0.09 ppm	0.07 ppm	0.07 ppm	0.07 ppm	0.07 ppm
	Annual	0.021ppm	NA	0.019ppm	0.018ppm	0.017ppm
Respirable Particulate Matter (PM_{10})	24-Hour	**60 ug/m^3**	**58 ug/m^3**	**54 ug/m^3**	**73 ug/m^3**	**69 ug/m^3**
	Annual	**23** ug/m^3	**23** ug/m^3	**22 ug/m^3**	**21 ug/m^3**	**22 ug/m^3**
Fine Particulate Matter ($PM_{2.5}$)	24-Hour	56 ug/m^3	52 ug/m^3	55 ug/m^3	**64 ug/m^3**	**58 ug/m^3**
	Annual	12 ug/m^3	12 ug/m^3	12 ug/m^3	11 ug/m^3	11 ug/m^3

Bay Area (Basin Summary)						
Ozone (O_3)	1-Hour	**0.13** ppm	**0.11** ppm	**0.11** ppm	**0.13** ppm	**0.12** ppm
	8-Hour	**0.10** ppm	0.08 ppm	0.08 ppm	**0.10 ppm**	**0.09 ppm**
Carbon Monoxide (CO)	8-Hour	4.0 ppm	3.4 ppm	3.4 ppm	2.9 ppm	2.7 ppm
Nitrogen Dioxide (NO_2)	1-Hour	0.09 ppm	0.07 ppm	0.07 ppm	0.11 ppm	0.07 ppm
	Annual	0.021ppm	0.019ppm	0.019ppm	0.018ppm	0.018ppm
Respirable Particulate Matter (PM_{10})	1-Hour	**60** µg/m^3	**65** µg/m^3	**81** ug/m^3	**90** ug/m^3	**78** ug/m^3
	Annual	**25** ug/m^3	**26** ug/m^3	**24 ug/m^3**	**23 ug/m^3**	**26 ug/m^3**
Fine Particulate Matter ($PM_{2.5}$)	24-Hour	56 µg/m^3	**74** µg/m^3	55 µg/m^3	**64** µg/m^3	**64** µg/m^3
	Annual	12 ug/m^3	12 ug/m^3	12 ug/m^3	11 ug/m^3	11 ug/m^3

Source: BAAQMD Air Quality Summaries for 2002, 2003, 2004, 2005, and 2006 and California Air Resources Board Air Quality Data website http://www.arb.ca.gov/aqd/aqdpage.htm.

Note: ppm = parts per million and ug/m^3 = micrograms per cubic meter
Values reported in bold exceed ambient air quality standard
NA = data not available.

Table 3 Annual Number of Days Exceeding Ambient Air Quality Standards

Pollutant	Standard	Monitoring Station	Days Exceeding Standard 2003	2004	2005	2006	2007
Ozone (O_3.)	NAAQS 1-hr	San Jose	0	0	X	X	X
		BAY AREA	1	0	X	X	X
	NAAQS 8-hr	San Jose	0	0	0	1	0
		BAY AREA	7	0	1	12	1
	CAAQS 1-hr	San Jose	4	0	1	5	0
		BAY AREA	19	7	9	18	4
	CAAQS 8-hr	San Jose	--	--	1	5	0
		BAY AREA	--	--	9	22	9
Fine Particulate Matter (PM_{10})	NAAQS 24-hr	San Jose	0	0	0	0	0
		BAY AREA	0	0	0	0	0
	CAAQS 24-hr	San Jose	2	3	2	2	3
		BAY AREA	6	7	6	15	4
Fine Particulate Matter ($PM_{2.5}$)	NAAQS 24-hr*	San Jose	0	0	0	6	6
		BAY AREA	0	1	0	10	10
All Other (CO, NO_2, Lead, SO_2)	All Other	San Jose (Tully)	0	0	0	0	0
		BAY AREA	0	0	0	0	0

* Based on standard of 65 µg/m^3 that was in place until September 21, 2006, then 35 µg/m^3 standard.
X = Standard revoked in 2004.
NA = data not available.

Attainment Status

Areas that do not violate ambient air quality standards are considered to have attained the standard. Violations of ambient air quality standards are based on air pollutant monitoring data and are judged for each air pollutant. The Bay Area, as a whole, does not meet State or Federal ambient air quality standards for ground level O_3 and State standards for PM_{10} and $PM_{2.5}$.

Under the Federal Clean Air Act, the US EPA has classified the region as marginally nonattainment for the 8-hour O_3 standard. The EPA requires the region to attain the standard by 2007. The Bay Area has met the CO standards for over a decade and is classified *attainment maintenance* by the US EPA. The US EPA grades the region *unclassified* for all other air pollutants, which include PM_{10} and $PM_{2.5}$.

At the State level, the region is considered *serious non-attainment* for ground level O_3 and non-attainment for PM_{10} and $PM_{2.5}$ California ambient air quality standards are more stringent than the national ambient air quality standards. The region is required to adopt plans on a triennial basis that show progress towards meeting the State O_3 standard. The area is considered attainment or unclassified for all other pollutants.

Recent $PM_{2.5}$ monitoring data for San José suggest that Santa Clara County exceeds the new national $PM_{2.5}$ standards for 24-hour exposures. U.S. EPA is expected to make rulings on area attainment designations in 2010 based on 2007 to 2009 monitoring data. Most nonattainment areas would have until 2015 to attain the standards with some extensions to 2020 possible.

Sensitive Receptors

There are groups of people more affected by air pollution than others. CARB has identified the following who are most likely to be affected by air pollution: children under 14, the elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. These groups are classified as sensitive receptors. Locations that may contain a high concentration of these sensitive population groups include residential areas, hospitals, daycare facilities, elder care facilities, elementary schools, and parks.

Air Quality Impacts and Mitigations

Thresholds of Significance

CEQA Guidelines prepared by BAAQMD are used to establish the significance criteria to judge the impacts caused by the project. The following are the significance criteria that are used to judge project impacts:

- Conflict with or obstruct implementation of the applicable air quality plan.
- A substantial contribution to an existing or project violation of an ambient air quality standard would result if the project would cause an exceedance of the California Ambient Air Quality Standard for carbon monoxide of 9.0 parts per million over an 8-hour averaging period:

- A cumulatively considerable net increase of any criteria pollutant or a precursor to that pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors). This is judged by comparing direct and indirect project emissions to BAAQMD significance thresholds of 80 pounds per day for ROG, NOx, or PM_{10}.
- Expose sensitive receptors or the general public to substantial pollutant concentrations.
- Create or expose a substantial number of people to objectionable odors.

Impact 1: Violate any air quality standard or contribute substantially to an existing or projected air quality violation? *Less than significant*

Carbon monoxide emissions from traffic generated by the project would be the greatest pollutant concern at the local level. Congested intersections with a large volume of traffic have the greatest potential to cause high-localized concentrations of carbon monoxide. Measured carbon monoxide levels have been at healthy levels (i.e., below State and Federal standards) in the Bay Area since the early 1990s. As a result, the region has been designated as attainment for the standard. There is an ambient air quality monitoring station in central San Jose that measures carbon monoxide concentrations. The highest measured level over any 8-hour averaging period during the last three years is 3.4 parts per million (ppm). The contribution of project-generated traffic to these levels was predicted following the screening guidance recommended by BAAQMD. Future carbon monoxide levels were predicted near these intersections for existing conditions and with the project in place using traffic projections provided by Hexagon Transportation Consultants. Emission factors used were calculated using the EMFAC2007 model, developed by the California Air Resources Board, with default assumptions for Santa Clara County during winter that include a temperature of 40 deg. F. A slow speed of 5 miles per hour was used that results in higher emission rates. This screening analysis included the number of through lanes in the intersection configuration with a receptor located at the edge of the roadway. Screening calculations are also provided in Attachment 1. Refined modeling using wider roadways that account for turn lanes would result in lower concentrations due to the increased mixing zone. Results are reported as follows:

Table 4 Predicted Roadside Carbon Monoxide Concentrations

Description	Existing 2008	Background 2010	Project 2010	Cumulative 2010
Montague Expressway and North First Street	7.1 ppm	7.7 ppm	7.8 ppm	4.4 ppm
Montague Expressway and O'Toole Avenue	7.0 ppm	7.3 ppm	7.4 ppm	7.3 ppm
San Tomas Expressway and El Camino Real	6.9 ppm	6.4 ppm	6.7 ppm	4.1 ppm
Central Expressway and Bowers Avenue	6.6 ppm	6.1 ppm	6.3 ppm	4.0 ppm
BAAQMD Thresholds	*9.0 ppm (CAAQS)*			

The highest 8-hour concentration with the project in place (in 2010) is predicted to be 7.7 ppm over an 8-hour averaging period. This concentration would occur near the intersection of Montague Expressway and North First Street. Lower concentrations would occur at other intersections affected by project traffic. This represents the roadside concentration with future PM peak hour conditions, as reported by Hexagon Transportation Consultants. The results of this screening analysis indicate that project levels would be below the California ambient air quality standard (used to judge the significance of the impact) of 9.0 ppm; therefore, the impact is considered less than significant. Had levels been above the ambient air quality standards, a more refined analysis would have been conducted using the CALINE4 dispersion model and actual lane-receiver geometry.

Impact 2: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)? *Significant*

The Bay Area is considered a non-attainment area for ground-level ozone under both the Federal Clean Air Act and the California Clean Air Act. The area is also considered non-attainment for respirable particulates or particulate matter with a diameter of less than 10 micrometers (PM_{10}), and particulate matter with a diameter of less than 2.5 micrometers ($PM_{2.5}$) under the California Clean Air Act, but not the Federal Act. The area has attained both State and Federal ambient air quality standards for carbon monoxide. As part of an effort to attain and maintain ambient air quality standards for ozone and PM_{10}, BAAQMD has established thresholds of significance for air pollutants. These thresholds are for ozone precursor pollutants (reactive organic gases and nitrogen oxides) and PM_{10}. The Bay Area has attained carbon monoxide standards.

The project would add new traffic trips, which would lead to increased emissions of air pollutants. Emissions of air pollutants associated with the project were predicted using the URBEMIS2007 model (Version 9.2.4), distributed by the Rimpo Associates (*www.urbemis.com*) and recommended for use by BAAQMD. This model predicts daily emissions associated with land use developments. The model combines predicted daily traffic activity, associated with the different land use types, with emission factors from the State's mobile emission factor model (i.e., EMFAC2007). Fehr & Peers Transportation Consultants provided trip generation rates in the project traffic report. The model also predicts area source emissions associated with the proposed project, which are minor compared to emissions associated with traffic. Emissions associated with current uses of the site were also calculated and subtracted from the project site build out emissions to predict the net change in air pollutant emissions. The buildings on the northern parcel are currently vacant, however, the project applicant is planning to lease these buildings on an interim basis, and therefore traffic associated with these buildings was included in the existing scenario. URBEMIS2007 Model output files are included as Attachment 1. Daily emissions predicted with full buildout of the project scenarios are reported in Table 5 and compared against BAAQMD thresholds.

Table 5 Daily Project Emissions in Pounds Per Day

Scenario	Modeled Daily Emissions in Pounds Per Day (lbs/day)			
	Reactive Organic Gases (ROG)	**Nitrogen Oxides (NOx)**	**Respirable Particulates (PM_{10})**	**Fine Particulates ($PM_{2.50}$)**
Existing Uses (Full Occupancy)	60	68	88	17
Proposed Uses (Full Occupancy)	134	144	183	35
Net Increased Emissions	74	76	95	18
BAAQMD Thresholds	*80*	*80*	*80*	--

The project is not anticipated to result in the construction or modification of any other stationary air pollutant sources. If such sources are included in the project at a later time, they may require permits from BAAQMD. Such sources could include combustion emissions from boilers used for heating and cooling or standby emergency generators (rated 50 horsepower or greater). These sources would normally result in minor emissions, compared to those from traffic generation reported above. Sources of air pollutant emissions complying with all applicable BAAQMD regulations generally will not be considered to have a significant air quality impact. Stationary sources that are exempt from BAAQMD permit requirements due to low emission thresholds would not be considered to have a significant air quality impact.

New development of the project that replaces existing uses would increase emissions of ROG, NOx and PM_{10}. As shown in Table 5, the net increase of PM_{10} emissions would exceed the significance thresholds established by BAAQMD. BAAQMD has not established thresholds for $PM_{2.5}$ at this time. However, PM_{10} emissions include $PM_{2.5}$. These emissions would significantly affect regional air quality.

The State standard for PM_{10} and the new Federal standard for $PM_{2.5}$ are exceeded in the South Bay Area. The PM_{10} standard is exceeded on about 12 to 24 days each year. Statistics on the new Federal $PM_{2.5}$ standard have only been kept recently, showing exceedances on about 36 days in 2006. The project's emissions of PM_{10} could contribute to regional PM_{10} and $PM_{2.5}$ concentrations. The project impacts would be regional in nature since most of the emissions are produced by vehicle travel that is spread out over a broad area. PM_{10} and $PM_{2.5}$ are air pollutants that, at high concentrations, can result in damage to the respiratory tract increasing the number and severity of asthma attacks, cause or aggravate bronchitis, and other lung diseases. High PM_{10} levels also degrade visibility. The PM_{10} emissions are predicted to be above the significance thresholds established by BAAQMD, and therefore, would be considered *significant.*

Mitigation Measure AQ-1: Include measures to reduce motor vehicle use.

The following measures should be implemented to reduce the number of daily trips and vehicle miles traveled:

- Develop a Transportation Demand Management program that would include financial incentives provided by the project to reduce single-occupant vehicle trips.

- Consider providing transit stops on site or at convenient locations along Walsh Road with pedestrian access to the project sites. Pullouts should be designed so that normal traffic flow on arterial roadways would not be impeded when buses are pulled over to serve riders. Bus stops should include nearby shelter, benches, and posting of transit information. Any resulting plans to modify transit stops would have to be made in accordance with the City and VTA.

- Provide adequate shuttle service to CalTrain, LRT stations and the ACE stations.

- Bicycle amenities should be provided for the project. This would include secure bicycle parking for employees and bike lane connections.

- Provide onsite shower and locker room facilities for employee use.

- Include on-site retail uses such as cafeterias, coffee shops, ATM's and other retail services that would reduce daytime trips that would be made by office workers.

- Consider providing pedestrian signage and signalization. Enhanced pedestrian crossings at strategic areas with countdown signals should be considered.

- Pedestrian sidewalks or pathways should include easy access and signage to bus stops and roadways that serve the major site uses.

- Project site employers should be required to promote transit use by providing transit information and incentives to employees.

- The applicant and City shall explore opportunities to implement a "carshare program" and measures that would reduce vehicle travel by reducing parking availability (such as an employee parking cashout program).

Mitigation Measure AQ-2: The following mitigation measures should be implemented to reduce on-site emissions and indirect emissions from electricity usage:

- Provide exterior electrical outlets to encourage use of electrical landscape equipment.

- Prohibit idling of trucks at loading docks for more than 3 minutes and include signage indicating such a prohibition.

- If necessary, provide 110- and 220-volt electrical outlets at loading docks to eliminate any idling of trucks to operate auxiliary equipment.

- Implement a landscape plan that provides shade trees along pedestrian pathways.

- Implement "Green Building" designs, such a Leadership in Energy and Environmental Design (LEED) into buildings to increase energy efficiency, which would reduce the future energy demand caused by the project and, therefore, reduce air pollutant emissions indirectly.

The effectiveness of Mitigation Measures AQ-1 and AQ-2 are shown in Table 6. The net project PM_{10} emissions would be reduced, but not to a less-than-significant level. It is not possible to mitigate these emissions from on-site mitigation measures to levels that are below the significance thresholds. Therefore, the impact is considered significant and unavoidable.

Table 6 Daily Reduced Project Emissions in Pounds Per Day with Trip Reduction Measures and Mitigation Measures

	Modeled Daily Emissions in Pounds Per Day (lbs/day)			
Scenario	**Reactive Organic Gases (ROG)**	**Nitrogen Oxides (NOx)**	**Respirable Particulates (PM_{10})**	**Fine Particulates ($PM_{2.50}$)**
Unmitigated Net Increased Emissions (see Table 5)	74	76	95	18
Net Increased emissions with Transit Reductions	8	13	11	2
Net Increased Emissions	66	53	84	16
BAAQMD Thresholds	*80*	*80*	*80*	--

Impact 3: Expose sensitive receptors to substantial pollutant concentrations? *Less than significant with appropriate mitigation*

Operation of the project is not expected to cause any localized emissions that could expose sensitive receptors to unhealthy air pollutant levels. Demolition and construction activities would result in localized emissions of dust and diesel exhaust that could result in temporary impacts to adjacent land uses.

Construction Dust

Dust would be generated during demolition, grading and construction activities. Most of the dust would result during grading activities. The amount of dust generated would be highly variable and is dependent on the size of the area disturbed, amount of activity, soil conditions and meteorological conditions. Typical winds during late spring through summer are from the north. Nearby land uses are mostly industrial, commercial or offices. However, nearby active land uses

could be adversely affected by dust generated during construction activities. In addition, construction dust emissions can contribute to regional PM_{10} emissions.

Demolition activities may require permits from the BAAQMD if removal or disturbance of hazardous materials were to occur. For instance, the handling of asbestos containing materials is subject to BAAQMD Regulation 11 – *Hazardous Pollutants*, Rule 2 – *Asbestos Demolition, Renovation and Manufacturing*. Proper handling of these materials through implementation of BAAQMD rules and regulations would reduce exposure to TACs from this activity to a less than significant level.

Although grading and construction activities would be temporary, they would have the potential to cause both nuisance and health air quality impacts. PM_{10} is the pollutant of greatest concern associated with dust. If uncontrolled, PM_{10} levels downwind of actively disturbed areas could possibly exceed State standards. In addition, dust fall on adjacent properties could be a nuisance. If uncontrolled, dust generated by grading and construction activities represents a *significant* impact.

Construction Equipment Exhaust

Construction equipment and associated heavy-duty truck traffic generates diesel exhaust, which is a known Toxic Air Contaminant. BAAQMD has not developed any procedures or guidelines for identifying these impacts from temporary construction activities where emissions are transient. They are typically evaluated for stationary sources (e.g., large compression ignition engines such as generators) in health risk assessments over the course of lifetime exposures (i.e., 24 hours per day over 70 years). Diesel exhaust poses both a health and nuisance impact to nearby receptors. These construction activities would not be near sensitive receptors and are expected to occur during a relatively short time. Therefore, the impacts are considered to be less than significant if reasonable available control measures are applied.

Mitigation Measure AQ-3: Include measures to control dust emissions during construction.

Implementation of the measures recommended by BAAQMD and listed below would reduce the air quality impacts associated with grading and new construction to a *less- than-significant* level. Measures to reduce diesel particulate matter and $PM_{2.5}$ from construction are recommended to ensure that short-term health impacts to nearby sensitive receptors are avoided.

Dust (PM_{10}) Control Measures:

- Water all active construction areas at least twice daily and more often during windy periods. Active areas adjacent to residences should be kept damp at all times.
- Cover all hauling trucks or maintain at least two feet of freeboard.
- Pave, apply water at least twice daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas.

- Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas and sweep streets daily (with water sweepers) if visible soil material is deposited onto the adjacent roads.

- Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (i.e., previously-graded areas that are inactive for 10 days or more).

- Enclose, cover, water twice daily, or apply (non-toxic) soil binders to exposed stockpiles.

- Limit traffic speeds on any unpaved roads to 15 mph.

- Replant vegetation in disturbed areas as quickly as possible.

- Suspend construction activities that cause visible dust plumes to extend beyond the construction site.

- During renovation and demolition activities, removal or disturbance of any materials containing asbestos, lead paint or other hazardous pollutants will be conducted in accordance with BAAQMD rules and regulations

Mitigation Measure AQ-4: Include measures to control diesel exhaust emissions during construction.

- Diesel equipment standing idle for more than five minutes shall be turned off. This would include trucks waiting to deliver or receive soil, aggregate, or other bulk materials. Rotating drum concrete trucks could keep their engines running continuously as long as they were onsite.
- Properly tune and maintain equipment for low emissions.

Impact 4: Create objectionable odors affecting a substantial number of people? *Less than significant*

During construction, the various diesel powered vehicles and equipment in use onsite would create localized odors. These odors would be temporary and not likely to be noticeable for extended periods of time much beyond the project's site boundaries. The potential for diesel odor impacts is therefore *less than significant.* The proposed office uses that would be constructed would not produce any offensive odors; therefore this would be a *less-than-significant* impact.

Impact 5: Conflict with or obstruct implementation of the applicable air quality plan? *Less than Significant with mitigation*

The most current Clean Air Plan (CAP), the *2005 Bay Area Ozone Strategy*, was adopted by BAAQMD in 2006. This plan is based on population projections through 2020 compiled by the association of Bay Area Governments (ABAG). The project proposes increased office uses on a site that currently is used in the same manner. The project site is currently designated *Light Industrial* under the City of Santa Clara's adopted General Plan. The proposed project does not conform to the existing land use designation due to the proposed height, and therefore, proposes a General Plan Amendment to *Office/Research and Development* and rezoning to *PD-Planned Development* to allow for the demolition of the existing structures on the site and the construction of up to 1,950,000 square feet of office space.

Santa Clara is a job-rich city. The project would increase the number of jobs in the city. Although approval of the project would increase the number of jobs in the City, the project would not induce substantial population growth in the City. Therefore, the project would not affect population forecasts that would affect regional air quality planning efforts. However, the proposed project would incrementally increase the City's jobs/housing imbalance. The project would increase office uses at a site that is not well served by transit. The site is located more than 2,000 feet from a transit station or major bus stop. As a result, the project could conflict with regional vehicle miles traveled forecasts.

Determining consistency with the Clean Air Plan also involves assessing whether Transportation Control Measures (TCMs) contained in the *2005 Bay Area Ozone Strategy* are implemented. The 2005 Ozone Strategy (i.e., BAAQMD's most recent Clean Air Plan) includes 20 transportation control measures, of which seven require participation at the local level. The latest set of adopted TCMs, which identify local governments as implementing agencies, are listed by BAAQMD CEQA Guidelines. TCMs that would apply to projects are designed to reduce motor vehicle travel by encouraging use of other transportation modes. For projects, these would include amenities that would encourage transit, bicycle and pedestrian modes of transportation. Parking strategies that discourage single-occupant vehicles trips are encouraged by BAAQMD.

The project cannot individually implement the listed TCMs that require local action; however, the City's General Plan policies should include all those measures that are consistent with the City's responsibility. There are measures that the project could implement to make TCMs more effective. The project description does not include specific project-specific measures or features that are consistent with all applicable TCMs identified in the *2005 Bay Area Ozone Strategy*. The project could conflict with regional clean air planning efforts due to increases in vehicles miles traveled that may occur. This would be a *significant impact*.

Mitigation Measure: Implementation of Mitigation Measure AQ-1 would implement appropriate transportation control measures and reduce project vehicle trips.

Memo

To: Shannon George (DJP)

Date: June 27, 2007

From: James A. Reyff

Subject: GHG Emissions for Harvest – San Tomas Business Park

GHG emissions for the proposed project were predicted based on direct area source emissions and indirect emissions from vehicle travel and electricity demand caused by the project.

The URBEMIS2007 model output (i.e., the Attachment) includes CO_2 emissions from project vehicle travel and natural gas use. It does not include electricity use. So those emissions were calculated separately.

Electricity use emissions could be roughly calculated by assuming 16,750 kW /yr per 1,000 sf of commercial or retail space. These factors come from the latest CAPCOA document on CEQA and Climate Change (see p61 of link below)[1]. The CCAR estimates 399g CO2/kW hr (see link below)[2]. We included a loss factor (e.g., 8%) to account for electricity losses from the generating station to the consumer. Therefore, CO2 emissions from electricity use are calculated as electricity use * emission factor / (1-transmission loss and distribution factor). The approved project currently includes 691,210 square feet of office or commercial uses. This would be expanded to 1,950,000 square feet.

The difference between existing potential use and build out of proposed project in tons of CO2 per year is as follows:

Source	Emissions – Approved Build Out	Emissions – Future Build Out
Area Sources – mostly natural gas from URBEMIS2007	1,010 tpy	2,278 tpy
Indirect sources – vehicle travel from URBEMIS2007	8,388 tpy	16,923 tpy
Indirect Sources – electricity demand calculated from CAPCOA and CCAR guidance	5,530 tpy	15,601 tpy
Total	14,928 tpy	34,802 tpy
Net Difference	19,874 tons per year	

[1] http://www.capcoa.org/
[2] http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

These emissions include mitigation for automobile trips (about 10% reduction) and area sources (about 20% reduction). Mitigation for electricity use was not applied to these calculations. We suggest that predicted electricity consumption for the proposed project be used to provide a better estimate of the CO_2 emissions. There are other greenhouse gas (GHG) emissions, such as those from methane and nitrous oxide from these sources. Although these are more potent GHG's, their emissions are almost negligible for this project. Therefore, the contribution of methane and nitrous oxide are not included.

JR

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: Z:\I&R Docs\07-244 San Tomas Business Park\URBEMIS2007\CurrentSan Tomas Urbemis.urb924

Project Name: San Tomas Business Park Existing Uses

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.82	0.84	1.00	0.00	0.00	0.00	1,009.66

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	10.38	13.38	121.33	0.08	16.07	3.08	8,665.15
TOTALS (tons/year, mitigated)	10.07	12.95	117.44	0.08	15.55	2.97	8,387.76
Percent Reduction	2.99	3.21	3.21	0.00	3.24	3.57	3.20

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	11.20	14.22	122.33	0.08	16.07	3.08	9,674.81

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.06	0.84	0.71	0.00	0.00	0.00	1,009.17
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscape	0.02	0.00	0.29	0.00	0.00	0.00	0.49
Consumer Products	0.00						
Architectural Coatings	0.74						
TOTALS (tons/year, unmitigated)	0.82	0.84	1.00	0.00	0.00	0.00	1,009.66

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
General office building	7.68	9.90	89.78	0.06	11.89	2.28	6,411.89
R&D	2.70	3.48	31.55	0.02	4.18	0.80	2,253.26
TOTALS (tons/year, unmitigated)	10.38	13.38	121.33	0.08	16.07	3.08	8,665.15

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Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Mitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
General office building	7.45	9.58	86.90	0.06	11.51	2.20	6,206.63
R&D	2.62	3.37	30.54	0.02	4.04	0.77	2,181.13
TOTALS (tons/year, mitigated)	10.07	12.95	117.44	0.08	15.55	2.97	8,387.76

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2009 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
General office building		9.17	1000 sq ft	509.86	4,675.42	37,882.56
R&D		9.06	1000 sq ft	181.35	1,643.03	13,312.66
					6,318.45	51,195.22

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.8	1.7	97.9	0.4
Light Truck < 3750 lbs	12.9	2.3	94.6	3.1
Light Truck 3751-5750 lbs	19.8	1.0	98.5	0.5
Med Truck 5751-8500 lbs	6.5	0.0	100.0	0.0

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Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Lite-Heavy Truck 8501-10,000 lbs	0.9	0.0	77.8	22.2
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.2	71.9	28.1	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.6	0.0	83.3	16.7

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
General office building				35.0	17.5	47.5
R&D				35.0	17.5	47.5

Existing/Approved Use

Using CAPCOA/CCAR method

Commercial

Sq. Feet	Usage Rate	Emissions (tpy)	Metric tpy
691210	16750	5530	5017

Residential

0	7000	0	0

Using EPA Emissions Data method

Commercial

Sq. Feet	Unit Emission Rate	Emissions (tpy)	Metric tpy
691210	11497	3973	3605

Residential

0	10348	0	0

Proposed use

Using CAPCOA/CCAR method

Commercial

Sq. Feet	Usage Rate	Emissions (tpy)	Metric tpy
1950000	16750	15601	14153

Residential

0	7000	0	0

Using EPA Emissions Data method

Commercial

Sq. Feet	Unit Emission Rate	Emissions (tpy)	Metric tpy
1950000	11497	11210	10169

Residential

0	10348	0	0

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: Z:\I&R Docs\07-244 San Tomas Business Park\URBEMIS2007\ProposedSan Tomas Urbemis.urb924

Project Name: San Tomas Business Park Proposed Uses

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

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Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	2.26	2.37	2.13	0.00	0.00	0.00	2,847.25
TOTALS (tons/year, mitigated)	2.02	1.90	1.66	0.00	0.00	0.00	2,277.72
Percent Reduction	10.62	19.83	22.07	NaN	NaN	NaN	20.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	22.30	27.83	252.37	0.18	33.43	6.40	18,024.39
TOTALS (tons/year, mitigated)	21.11	26.14	236.93	0.17	31.39	6.01	16,923.20
Percent Reduction	5.34	6.07	6.12	5.56	6.10	6.09	6.11

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	24.56	30.20	254.50	0.18	33.43	6.40	20,871.64
TOTALS (tons/year, mitigated)	23.13	28.04	238.59	0.17	31.39	6.01	19,200.92
Percent Reduction	5.82	7.15	6.25	5.56	6.10	6.09	8.00

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.17	2.37	1.99	0.00	0.00	0.00	2,847.00
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscape	0.01	0.00	0.14	0.00	0.00	0.00	0.25
Consumer Products	0.00						
Architectural Coatings	2.08						
TOTALS (tons/year, unmitigated)	2.26	2.37	2.13	0.00	0.00	0.00	2,847.25

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Mitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.14	1.90	1.59	0.00	0.00	0.00	2,277.60
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscape	0.01	0.00	0.07	0.00	0.00	0.00	0.12
Consumer Products	0.00						
Architectural Coatings	1.87						
TOTALS (tons/year, mitigated)	2.02	1.90	1.66	0.00	0.00	0.00	2,277.72

Area Source Changes to Defaults

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Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
General office building	22.30	27.83	252.37	0.18	33.43	6.40	18,024.39
TOTALS (tons/year, unmitigated)	22.30	27.83	252.37	0.18	33.43	6.40	18,024.39

Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Mitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
General office building	21.11	26.14	236.93	0.17	31.39	6.01	16,923.20
TOTALS (tons/year, mitigated)	21.11	26.14	236.93	0.17	31.39	6.01	16,923.20

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2009 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
General office building		6.74	1000 sq ft	1,950.00	13,143.00	106,491.15
					13,143.00	106,491.15

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.8	1.7	97.9	0.4

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Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Truck < 3750 lbs	12.9	2.3	94.6	3.1
Light Truck 3751-5750 lbs	19.8	1.0	98.5	0.5
Med Truck 5751-8500 lbs	6.5	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.9	0.0	77.8	22.2
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.2	71.9	28.1	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.6	0.0	83.3	16.7

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			

% of Trips - Commercial (by land use)

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
General office building				35.0	17.5	47.5